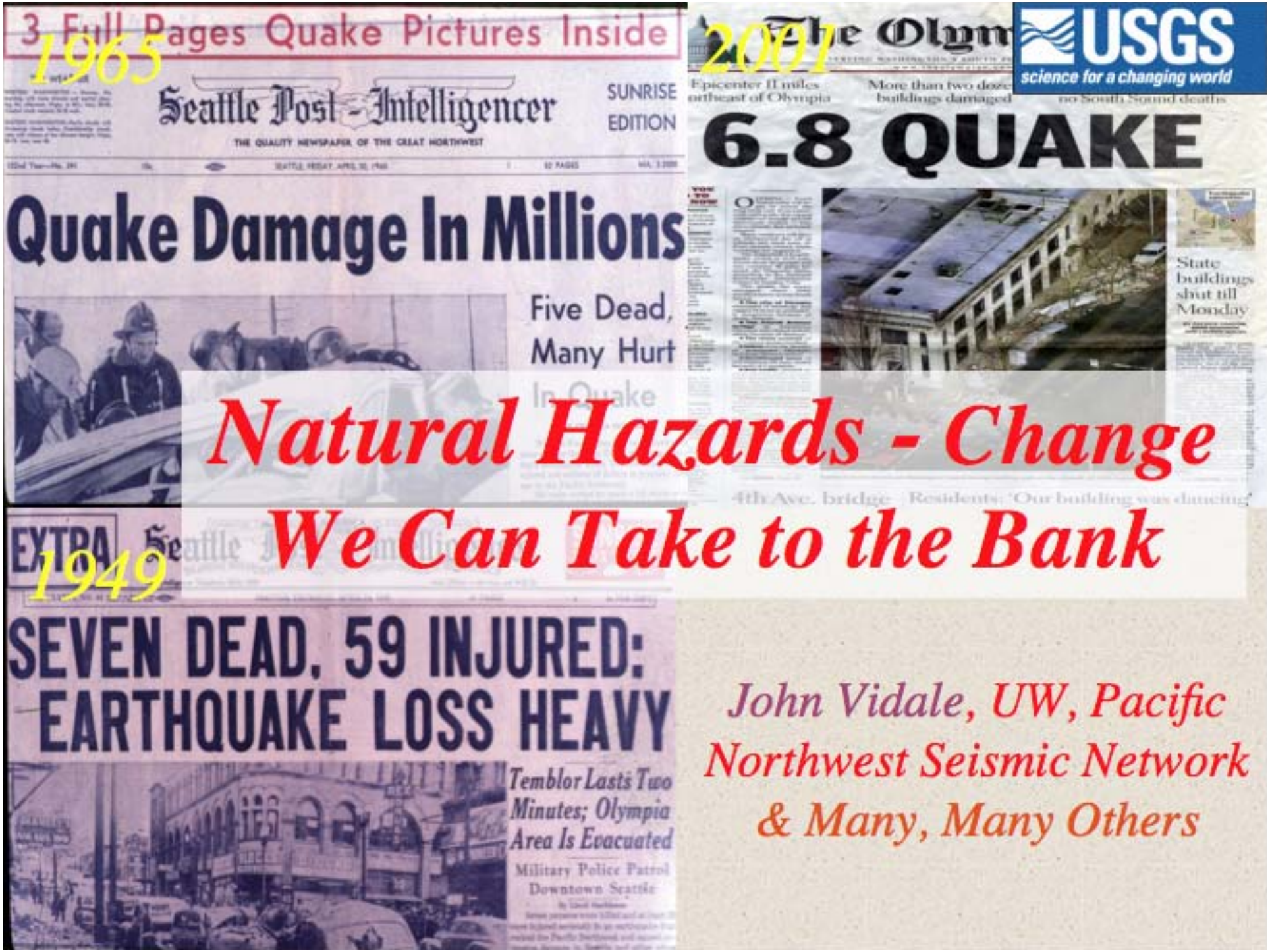
Sound Shake '08

Communications Break-Out

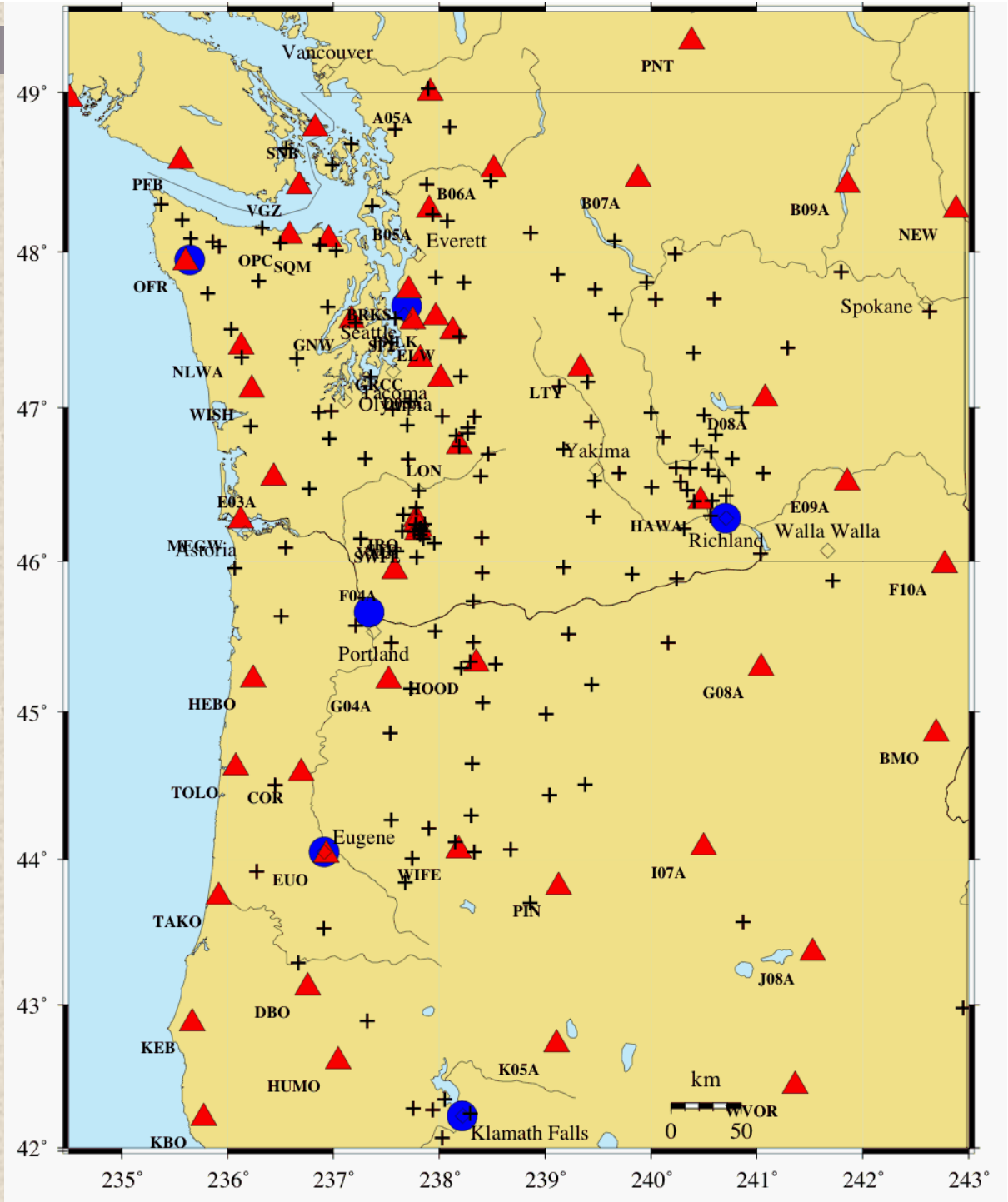
John Vidale
John_vidale@mac.com



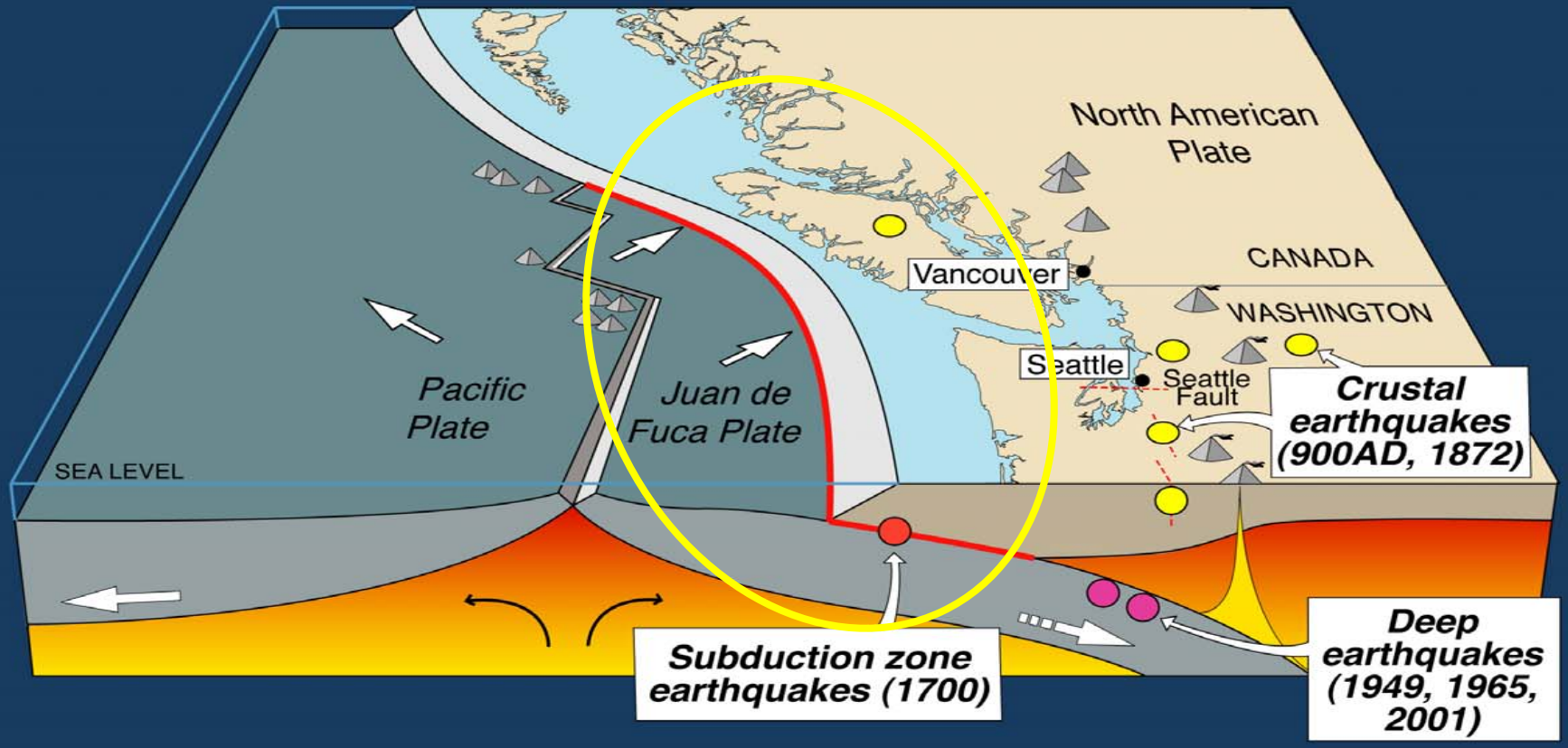
John Vidale, UW, Pacific Northwest Seismic Network & Many, Many Others

PNSN Seismometer map

- **U of Washington**, *Seattle, WA*
  - Operations and regional center
- **USGS, Cascade Volcano Observatory**, *Vancouver, WA*
  - Works on Mt St Helens and coordinates volcano monitoring
- **NSF, IRIS DMC,** *Seattle, WA*
  - Archives data
- **U of Oregon**, *Eugene, OR*
  - Maintenance of stations in southern Oregon
- **Pacific Northwest Laboratory**, *Richland, WA*
  - Operates stations in eastern Washington

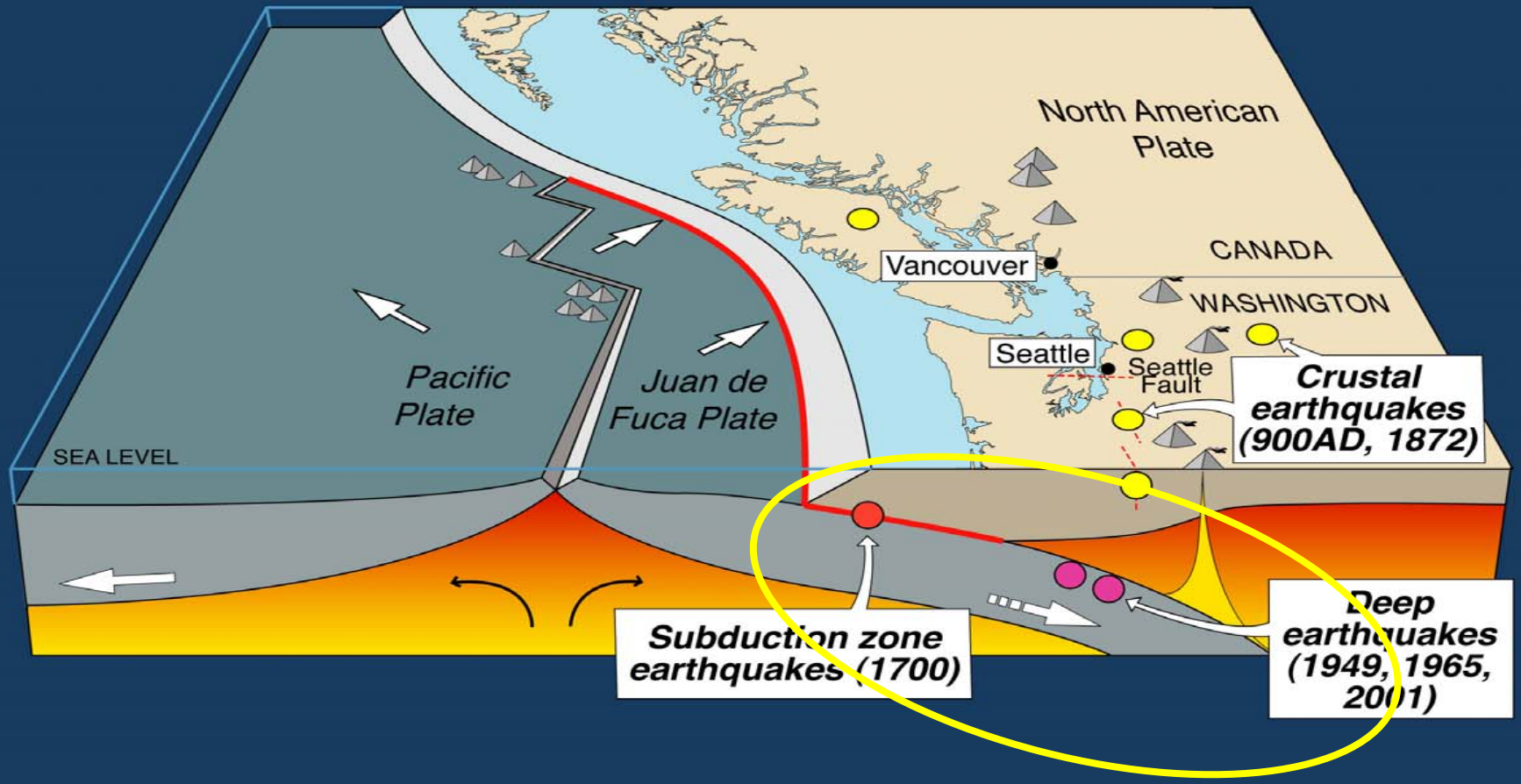


Cascadia earthquake sources



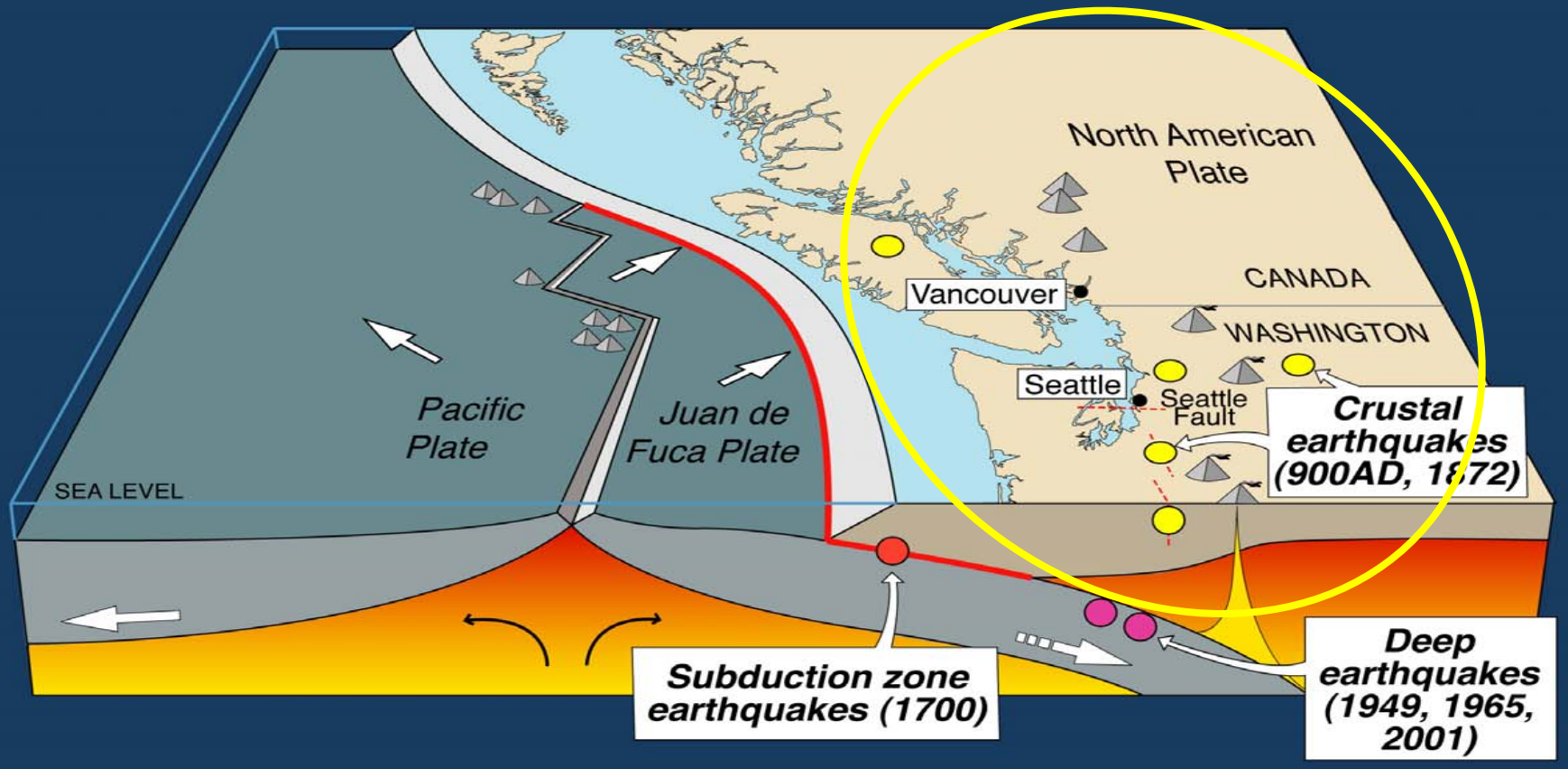
Subduction zone earthquakes are the ***Big Ones****, occurring where the downgoing plate is usually stuck.* *About 10% chance of* ***M9+ each 50 years.***

Cascadia earthquake sources



'Intraplate' (deep) earthquakes have been moderate in size & deep, occurring as the plate flexes on its way down. ***In a 50-year window, there's an 84% chance of a M6.5 interplate earthquake.***

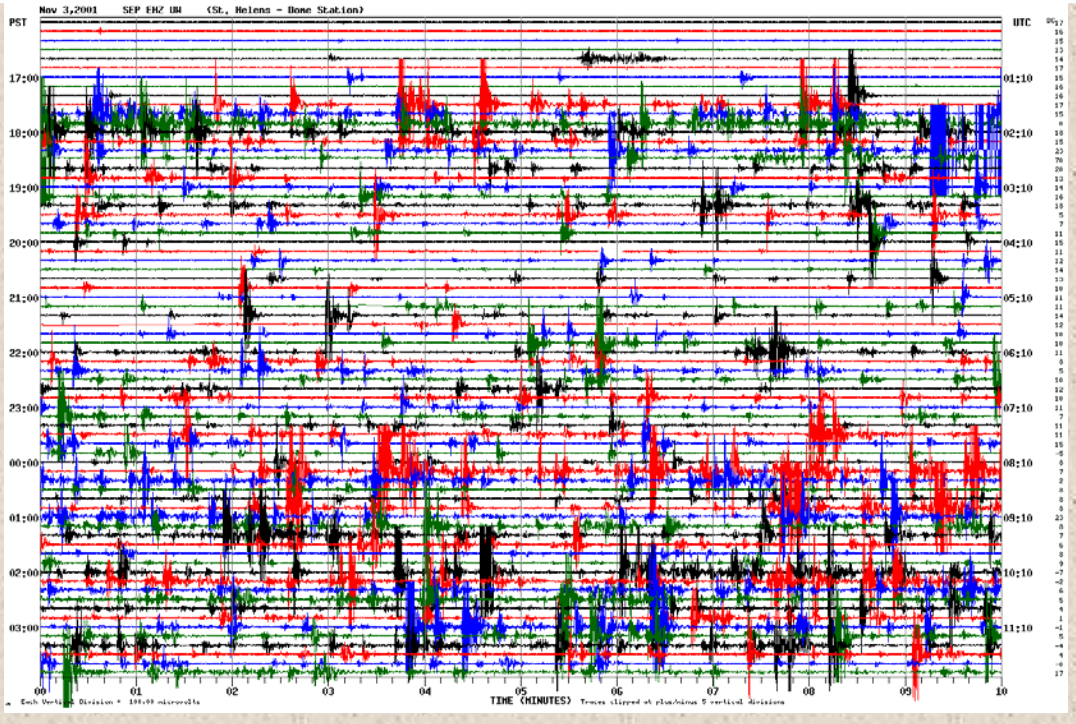
Cascadia earthquake sources



'Crustal' earthquakes *occur because* ***the crust is deforming****, as well as the subduction zone slipping and the plate flexing.* ***In a 50-year window, the chances are 5% & 15% of an M6.5+ earthquake on the Seattle fault & in the crust anywhere in the Puget Sound region, respectively.***

Near-Realtime Information Products

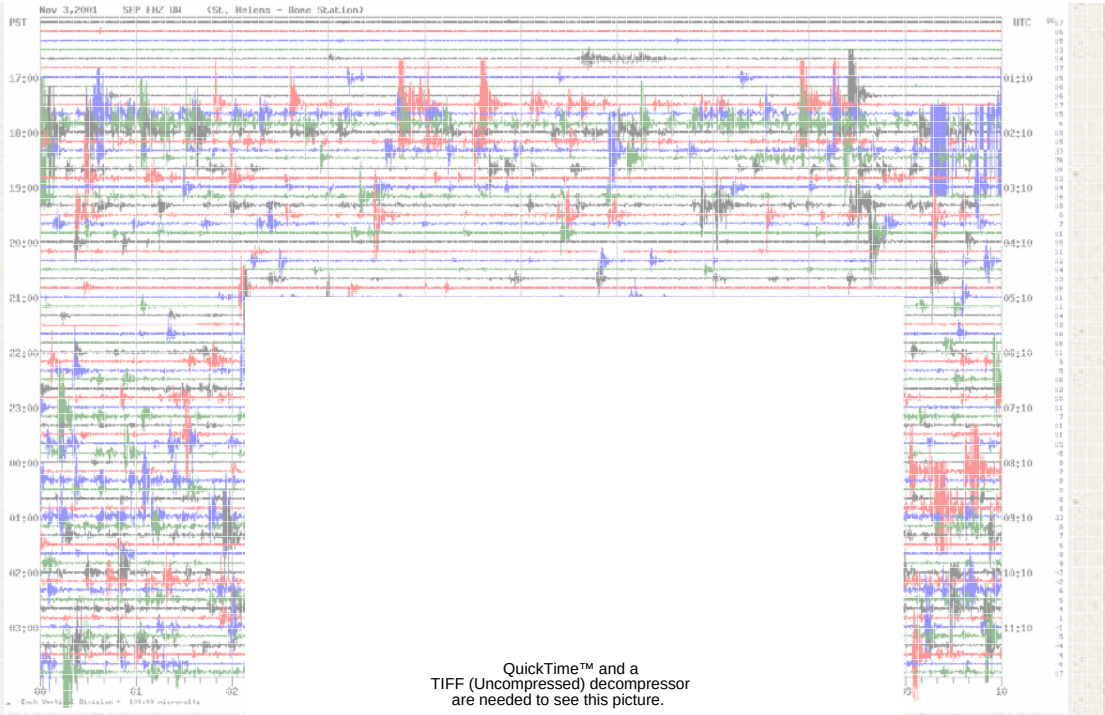
Seismograms



Near-Realtime Information Products

Seismograms

Community Internet Intensity Maps



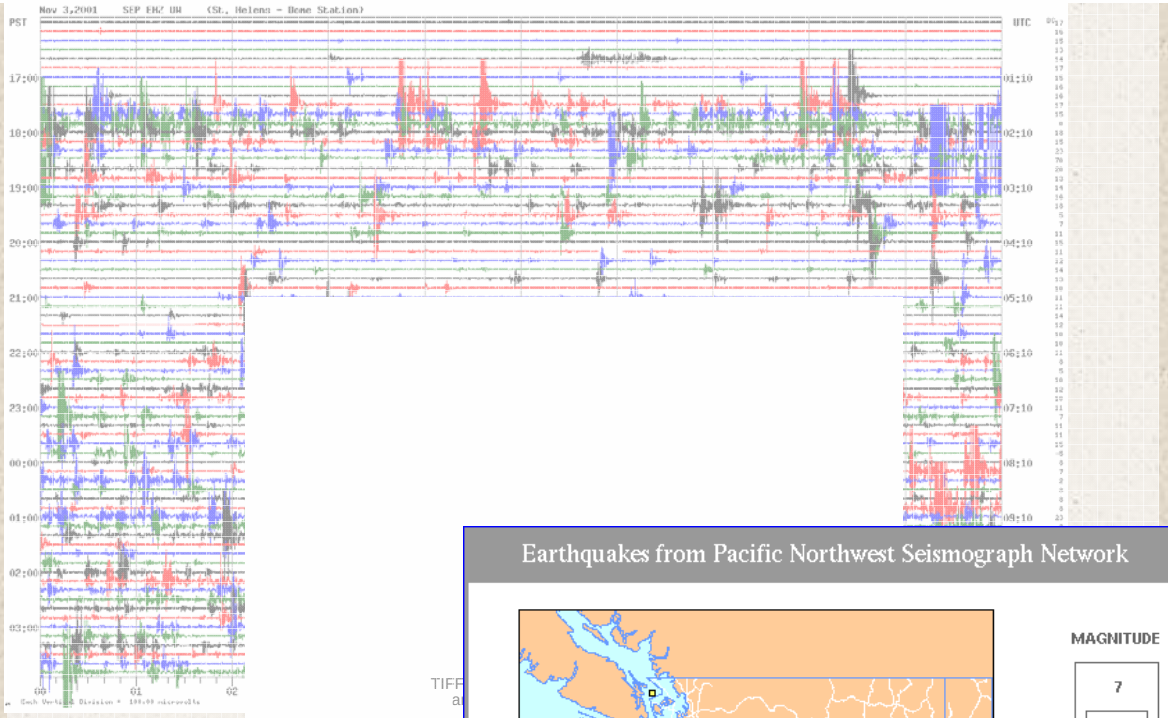
QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

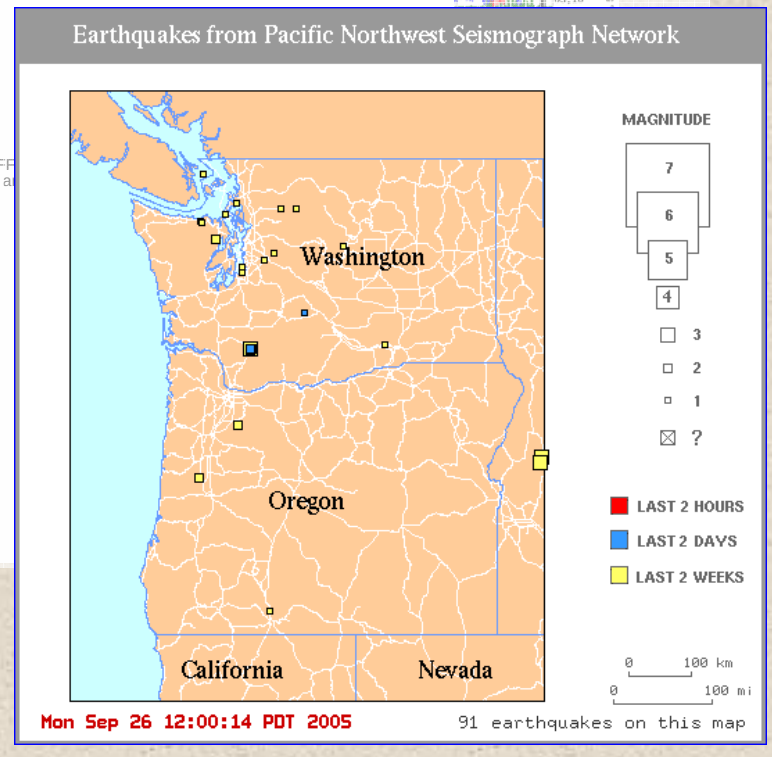
Near-Realtime Information Products

Seismograms

Community Internet Intensity Maps

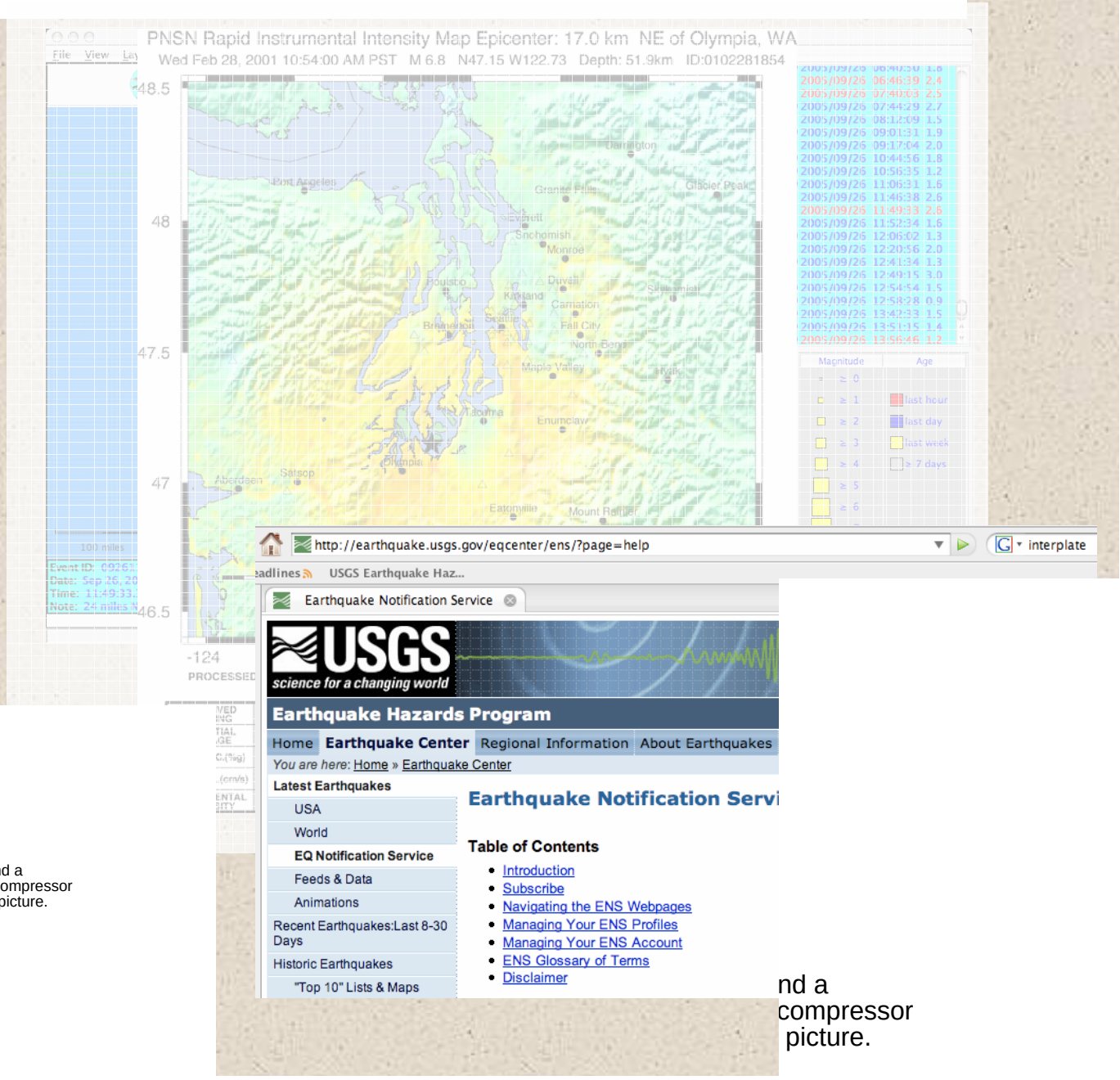
Recent Earthquakes





Near-Realtime Information Products

- Broadcast notification of earthquakes within ~10 minutes
- ShakeMaps
- A simpler option; the Earthquake Notification Service



QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

nd a
compressor
picture.

Reports, Fact Sheets, Maps, Databases

Advanced National Seismic System

ANSS

ANSS CATALOG SEARCH

ANSS Catalog Home | Search | Maps and lists | Details | Caveats | Links

Use the form below to search the ANSS global earthquake catalog. Help with the form is available. Feel free to visit the earthquake maps and lists as well.

01/08/2003 - Try the simplified version of the catalog search with output maps!

Select earthquake catalog - Input dataset and output format

ANSS composite catalog (1898–present)

- (•) Catalog in readable format
- ( ) Readable 80-col format
- ( ) Raw catalog format

Select earthquake parameters

Start date,time: 2002/01/01,00:00:00

End date,time:

Min magnitude: 6.0 Max magnitude:

Min depth (km): Max depth (km):

Min latitude: Max latitude:

Min longitude: Max longitude:

Event Types: (•) Earthquakes ( ) Blasts (Quarry or Nuclear) ( ) All Events

☐ Include Events with no reported Magnitude

USGS science for a changing world

ANSS

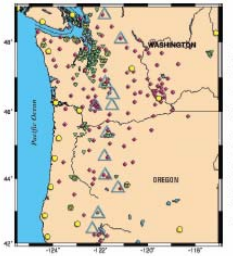
THE ADVANCED NATIONAL SEISMIC SYSTEM REGIONAL NETWORKS

PNSN–Pacific Northwest Seismograph Network

The Pacific Northwest Seismograph Network (PNSN), an integral part of the Advanced National Seismic System (ANSS), locates earthquakes in Washington and Oregon and communicates earthquake information to the public.

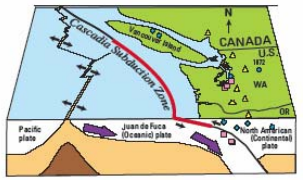
Earthquakes in the Pacific Northwest

The Pacific Northwest (PNW) is an active seismic area with three distinct types of earthquakes. Major deep earthquakes recur every 30 years or so in western Washington. Subduction-zone earthquakes, which can be as large as magnitude 9.0 (M9.0), recur every few hundred years on a long offshore fault that parallels the coast of Washington and Oregon. Shallow crustal faults within the continental plate are a hazard to major urban centers from Seattle to Portland. Although recurrence times are not known, crustal earthquakes are a possibility almost anywhere in Washington and Oregon, including areas east of the Cascades such as Wenatchee, Yakima, and Walla Walla. Crustal earthquakes also precede volcanic outbursts and were used to predict eruptions at Mount St. Helens in the 1980s.



Each year, the PNSN records several dozen felt earthquakes and thousands of smaller earthquakes—ongoing reminders of the earthquake hazards in Washington and Oregon.

The Network: PNSN's Earthquake Monitoring Equipment uses several different types of sensors that measure ground motion: accelerometer ▽; seismometer (3 components) ○; seismometer (1 component) ◆; Cascade volcanoes △.



Deep earthquakes (40 miles below the Earth's surface) are within the subducting Oceanic plate as it bends beneath the Continental plate. The largest deep Northwest earthquakes known were in 1949 (M7.1), 1965 (M6.5), and 2001 (M6.8).

Shallow earthquakes (less than 15 miles deep) are caused by faults in the North American Continental plate. The Seattle fault produced a shallow magnitude 7+ earthquake 1,100 years ago. Other M7+ earthquakes occurred in 1872, 1918, and 1946.

Subduction earthquakes are huge quakes that result when the boundary between the Oceanic and Continental plates ruptures. In 1700, the most recent Cascadia Subduction Zone earthquake sent a tsunami as far as Japan.

△ Mount St. Helens/other Cascade volcanoes.

The PNSN

To monitor earthquake and volcanic activity across the Pacific Northwest, the University of Washington and the University of Oregon cooperatively operate the PNSN. Beginning in 1969 with five seismometers, the PNSN has grown to more than 200 seismograph stations distributed across the region. At the heart of the PNSN is an information and operations center, located at the University of Washington Department of Earth and Space Sciences, which provides rapid earthquake information to emergency responders, the press, and the public and high-quality data to engineers. The PNSN is sponsored by the U.S. Geological Survey (USGS), the U.S. Department of Energy, and the State of Washington.

Earthquake damage: engineers examine a lateral-spreading soil failure adjacent to Capitol Lake in Olympia, Washington, after the 2001 Nisqually earthquake. [Photograph by Pedro Arduino, University of Washington.]

U.S. Department of the Interior
U.S. Geological Survey

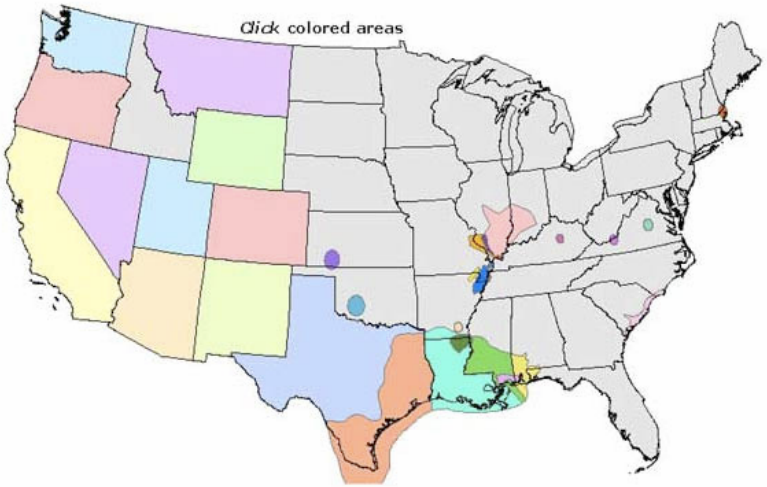
Printed on recycled paper

Fact Sheet 2004-3072
August 2004

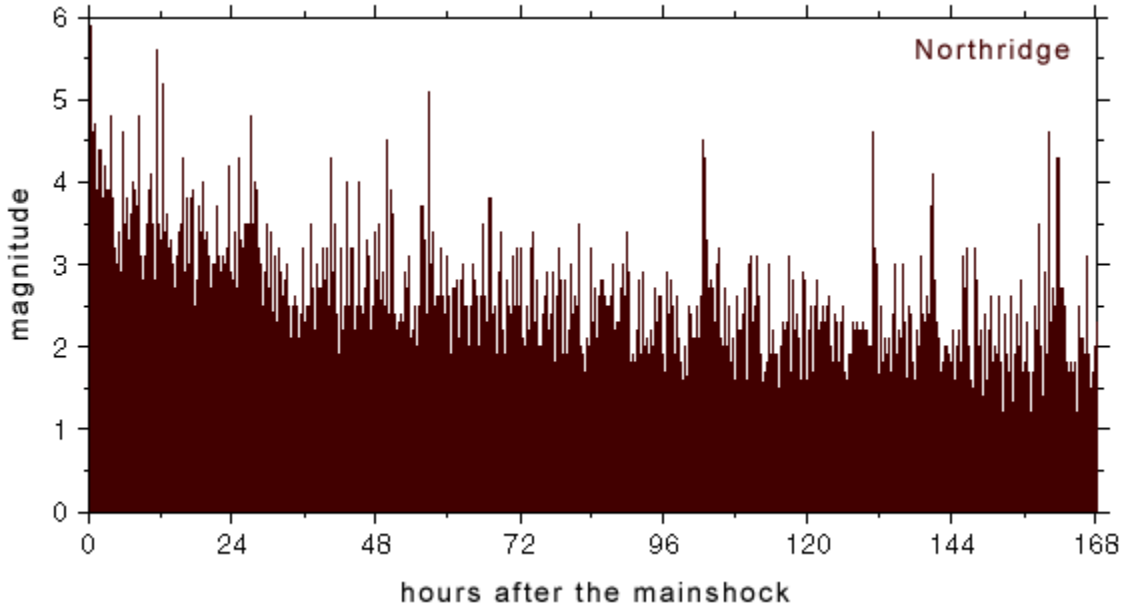
Fault and Fold Database

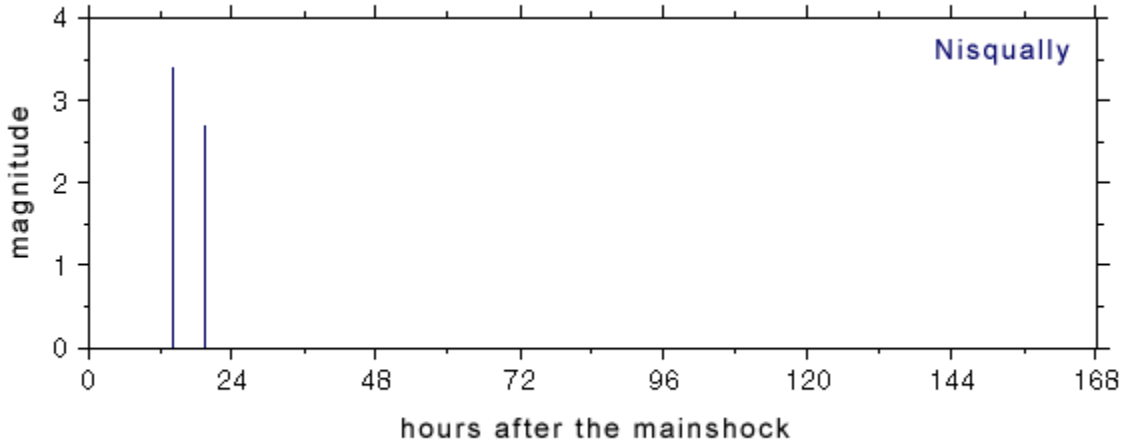
Home | Search the text database | US Map Help | Frequently asked questions | Download Data | Contributors | Glossary | Site Map

Faults and Folds by State and Region



Soon - Aftershock Forecasts





Northridge Earthquake

100s of aftershocks

Largest – M5.9

Nisqually Earthquake

2 aftershocks

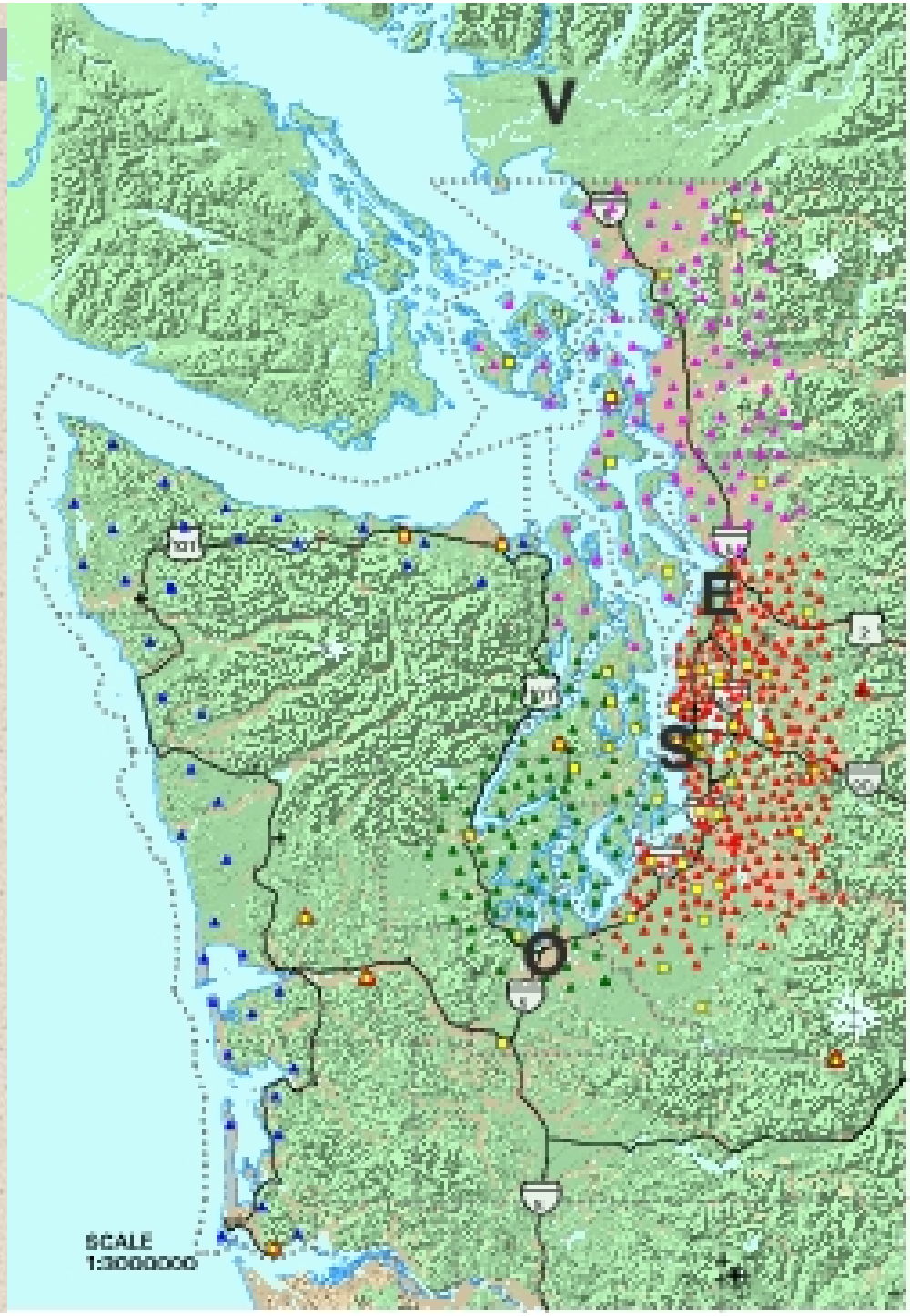
Largest – M3.4

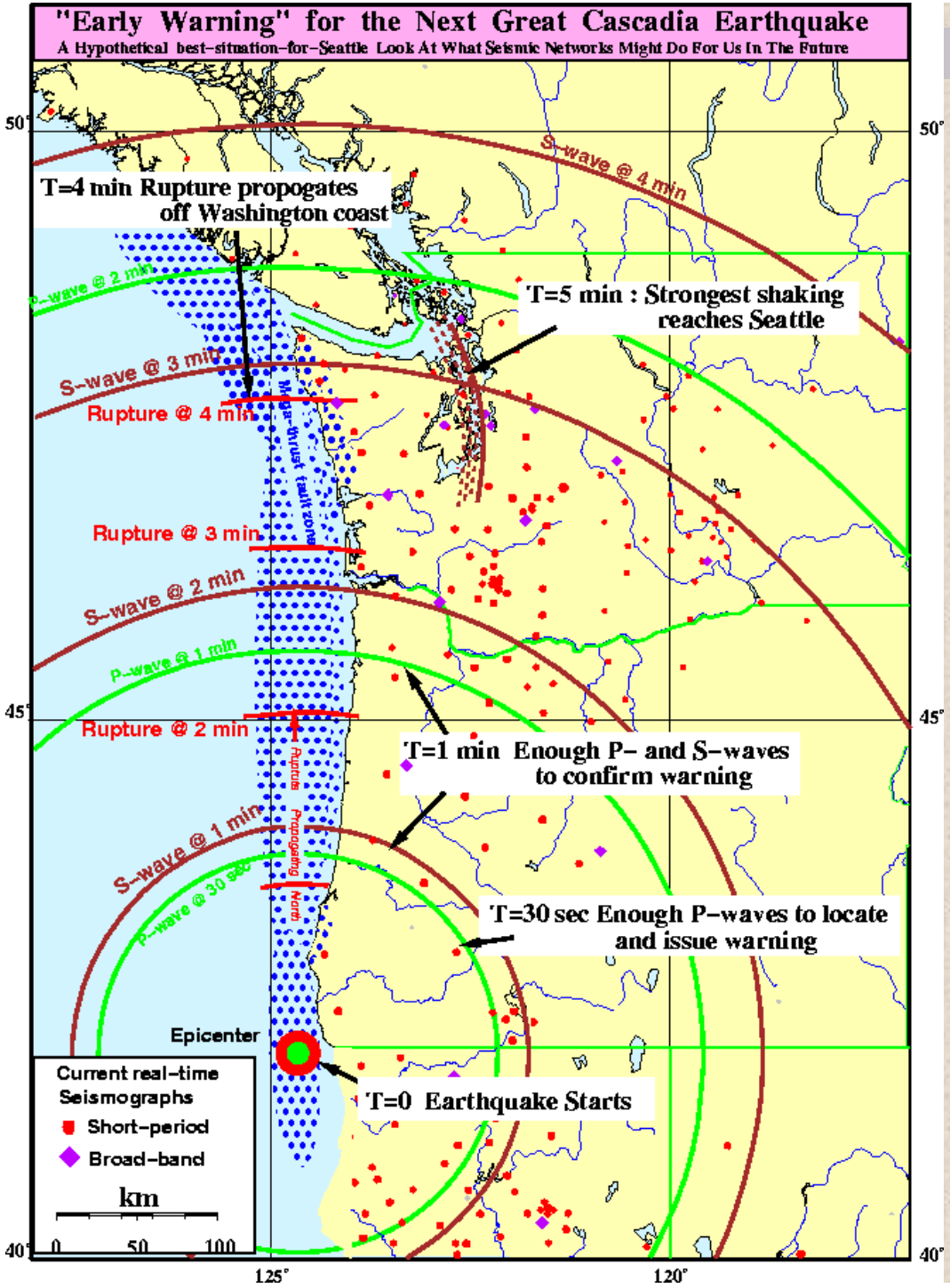
In a while

QuakeNet-

USGS plan to place 500 sensors on I-5 corridor -

highways, schools, hospitals, …





Eventually - Earthquake early warning

More info

EMD Earthquake workshop

All day, October 16, 2007 in Yakima

Hazards Roundtable

10 am, October 17, 2007 at the University of Washington, Seattle

National Earthquake Conference

April 22-26, 2008 in Seattle

http://www.earthquakeconference.org